Utah Division of
WILDLIFE RESOURCES

Common questions about the use of rotenone

Rotenone is a safe, effective tool to manage fisheries

Many people have questions about fish-removal and restoration work using rotenone. Here are the most common questions and answers:

What is rotenone?

Rotenone is a natural substance that comes from the roots of tropical plants in the bean family. It is a selective, non-specific insecticide/piscicide (insects and fish), used in home gardens for insect control, for lice and tick control on pets, and for fish eradications as part of fisheries management. Rotenone is chosen because it has a long, safe history for fish-removal projects in Utah, the West and worldwide.

How does it work?

Rotenone makes it impossible for fish to use the oxygen absorbed in their blood. Rotenone is highly toxic to fish due to its rapid uptake across the gill surface. Waterfowl and other birds as well as mammals are comparably resistant. The U.S. Environmental Protection Agency has approved the use of rotenone to control and sample fish populations in lakes, ponds and streams. Utah has used it many times to control invasive species and to restore native and threatened species.

Is rotenone dangerous to people, pets or wildlife?

No. The highest allowable rotenone treatment rate is .25 mg per liter of water. At that concentration, a 132-pound person would have to drink 40,000 gallons of treated water in a 24-hour period to receive a lethal dose. Likewise, a 0.25-pound bird would have to drink 100 quarts of treated water — or eat more than 40 pounds of fish and invertebrates — within 24 hours to receive a lethal dose.

Does rotenone affect all aquatic animals in the same way?

No. Fish and other gilled organisms are more susceptible to rotenone. All animals have natural enzymes in the digestive tract that neutralize rotenone.

Is rotenone a groundwater contaminant?

No. The ability of rotenone to move through soil is low to slight (less than one inch in most soils). Wells and groundwater will not be affected. Monitoring studies have shown that groundwater in adjacent areas has not been affected.

How is rotenone neutralized?

To neutralize the effects of rotenone, project partners will use potassium permanganate, an oxidizing agent. Potassium permanganate breaks down into potassium, manganese and water. Both potassium and manganese are common in nature and have no harmful environmental effects at the concentrations used in the neutralization processes. Potassium permanganate will turn the water a purple color until it is diluted.

Will there be any noticeable effects of the rotenone treatment?

All of the fish removal will occur in the reservoir, and there may be a couple of noticeable effects:

- Temporary odor (less than a day)
- Temporary change in water color/quality for a short distance until the neutralizing agent (potassium permanganate) is diluted

Is there a relationship between rotenone and Parkinson's disease?

In 2000, a rotenone study was conducted in an attempt to produce symptoms similar to those of Parkinson's disease (PD). Rotenone was injected directly into the jugular veins of rats for a five-week period, and under those conditions, it did produce some PD-like symptoms. The study does not suggest that rotenone exposure is responsible for PD in humans, but does support the belief that chronic exposure to high concentrations of environmental toxins can increase the likelihood of the disease.

Where can I learn more about rotenone?

For more information on the use of rotenone to control fish populations, see the Rotenone Stewardship Program at http://www.fisheriessociety.org/rotenone.

What other northeastern Utah fisheries have been treated with rotenone to remove fish?

The following northeastern Utah fisheries have been treated with rotenone in the last 25 years:

- Big Sandwash
- Bullock Reservoir
- Brough Reservoir
- Cottonwood Reservoir
- Mann Creek
- Montes Creek
- Pelican Lake
- Spirit Lake and other lakes in the tributaries of the Middle Fork of Sheep Creek
- Strawberry Reservoir and its tributaries
- Steinaker Reservoir
- Willow Creek (Book Cliffs)

Where can I learn more about this project or ask some questions?

If you want to comment on this project, please email us at DWRcomment@utah.gov.